WHAT IS CLAIMED IS:

- 1. A method of producing minute metal balls, comprising the steps of cutting a wire material having a diameter ϕ at predetermined distances to provide metal pieces having a cut length L equal to or smaller than 2 mm and a ratio L/ ϕ in a range of 0.1 \leq L/ ϕ \leq 3.0, and introducing the metal pieces into a plasma flame to spheroidize the metal pieces.
- 2. A method of producing minute metal balls, comprising the steps of cutting a wire material having a diameter ϕ at predetermined distances to provide metal pieces having a cut length L equal to or smaller than 2 mm, a ratio L/ ϕ in a range of 0.1 \leq L/ ϕ \leq 3.0 and an average volume equal to or smaller than 5 x 10⁻⁴ cm³, and introducing the metal pieces into a plasma flame to spheroidize the metal pieces.
- 3. A method of producing minute metal balls, comprising the steps of cutting a wire material having a diameter ϕ at predetermined distances to provide metal pieces having a cut length L equal to or smaller than 2 mm, a ratio L/ ϕ in a range of 0.1 \leq L/ ϕ \leq 3.0, an average volume equal to or smaller than 5 x 10⁻⁴ cm³, and a CV value of volumes equal to or smaller than 5 % calculated according to the following equation:

CV value = $\sigma_v/V_{ave} \times 100$ (%),

wherein V_{ave} is an average volume of the metal

pieces, and σ_{ν} is a standard deviation in a distribution of volumes of the metal pieces; and introducing the metal pieces into a plasma flame to spheroidize the metal pieces.

- 4. A method of producing minute metal balls according to any of claims 1 to 3, wherein the metal pieces are made of any metal selected from the group consisting of Cu, Ag, Au and Al, or an alloy as a main of any of these metals.
- 5. A method of producing minute metal balls according to any of claims 1 to 3, wherein the metal pieces are made of any metal selected from the group consisting of Fe, Ti, W, Ni and Cr, or an alloy as a main of any of these metals.
- 6. A method of producing minute metal balls according to any of claims 1 to 3, wherein the metal pieces are introduced into the plasma flame forming a reducing atmosphere.
- 7. A method of producing minute metal balls according to any of claims 1 to 3, wherein 1 to 20 % by volume of a hydrogen gas is contained in a plasma operating gas for generating the plasma flame.
- 8. A method of producing minute metal balls according to any of claims 1 to 3, wherein RF plasma is used as the plasma flame.